

Birds as Carriers of the Chestnut-Blight Fungus.¹— Birds have been charged with distributing various plant diseases, but their relation to chestnut blight is the only case of this nature that has been scientifically investigated. The writers of the article here cited examined 36 birds belonging to 9 different species which were collected among diseased chestnuts in Pennsylvania. Using a most careful and thorough technique, they found that of the 36 birds tested 19 were "carrying spores of the chestnut-blight fungus. The highest positive results were obtained from two Downy Woodpeckers, which were found to be carrying 757,074 and 624,341 viable spores of *Endothia parasitica*. The next highest was a Brown Creeper with 254,019 spores." (p. 412). The other birds upon which spores were found were the Golden-crowned Kinglet, Junco, White-breasted Nuthatch, and Sapsucker. Three species, the Black and White Creeper, Flicker, and Hairy Woodpecker gave negative results. It was found also that the birds carried spores of a large number of fungi other than that producing chestnut-blight.

The authors conclude that "birds in general are important carriers of fungous spores," and that in particular "birds which climb or creep over the bark of chestnut trees are important agents in carrying viable pycnospores of the chestnut-blight fungus, especially after a period of considerable rainfall."

"Birds are probably not very important agents in spreading the chestnut blight locally, on account of the predominance of other and more important factors of dissemination, as, for example, the wind."

"The writers believe, however, that many of the so-called 'spot infections' (local centers of infection isolated from the area of general infection) have had their origin from pycnospores carried by migratory birds. Some of the birds tested were not permanent residents of eastern Pennsylvania, but were shot during their migration northward. These, no doubt, carry spores great distances. Each time the bird climbs or creeps over the trunk or limbs of a tree some of the spores may be brushed off and may lodge in crevices or on the rough bark. From this position they may be washed down into wounds by the rain and may thus cause infections." (p. 421).

The findings of this paper are based upon unimpeachable evidence and the conclusions must be accepted at face value. Nevertheless, the part birds play in the general spread of this disease is so small that it will never be seriously urged as a reason for diminishing bird protection.— W. L. M.

Reichenow's "Die Vögel."² The second volume of this important work was distributed on October 24. It follows the plan of volume one,

¹ Heald, F. D., and Studhalter, R. A., Journ. Agr. Research, II, No. 6, Sept. 1914, pp. 405-422, Pl. XXXVII, 2 figs.

² Die Vögel. Handbuch der Systematischen Ornithologie von Anton Reichenow Zwei Bände. Zweiter Band. Mit 273 text bildern gezeichnet von G. Krause. Verlag von Ferdinand Euhe. Stuttgart, 1914. Svo. pp. 1-628. Price, M. 18.40.